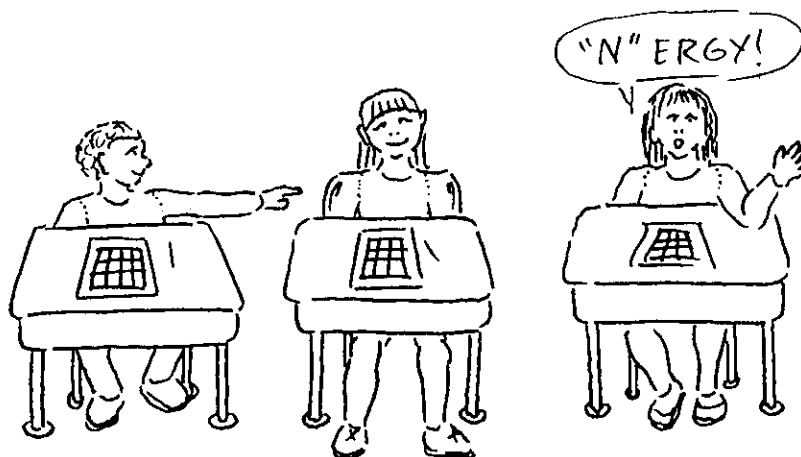


“N”ERGY

Grades 4-6



Overview

By playing “N”ERGY the students will become familiar with energy’s many different sources and forms. The students play a game similar to BINGO, but in this case the letters are “N”ERGY that stands for energy. The students have “N”ERGY cards in front of them with words in each square that stand for sources / types of energy. The first few times the students play the game they can use their “ energy fact sheets” that have the terms and their definitions. Later, the teacher reads the definition and if a student knows the term and has the term on his or her sheet, he/she can place a marker on that space. The first student who has five markers straight in a row calls out, “N”ERGY! Then the child calls out the terms he/she covered and the teacher checks to see if these are correct.

Objectives

- The students will develop an understanding that energy is the capacity to do work, or produce change.
- The students will develop an understanding that energy can be classified in different way depending on its different sources.
- The students will develop an understanding that energy comes in many different forms.

Materials

For the presenter:

- flashlight
- the teacher's "N"ERGY sheet (a list of terms and their definitions)
- a box or some type of container to draw the definition strips out of and read to the class.
- a teacher's "**term list**" with all the terms in alphabetical order. The teacher uses this to check off the correct term every time he/she reads a definition and then uses it to verify if a student does have the correct terms for "N"ERGY. Note: If the teacher laminates this list, he/she can check off the terms used and then wipe clean for the next game.

For the students:

- "N"ERGY sheet - use the same one for all students in the first few games
- space markers - to cover the terms on the "N"ERGY cards
- "N"ERGY cards - There are five different cards; look for the * by one of the letters in the word "N"ERGY at the top of the cards. Give the students different cards.
- dictionaries and encyclopedias

Getting Ready

Make sure you have the "N"ERGY definition sheets cut apart, term list, and cards ready to pass out to the students. There are five different students' cards to use. If the students are going to play the game in groups of four, make sure you have grouped the students so they are well balanced. If time allows laminate the term list before the lesson.

Procedures

1. **Focus:** Energy is the capacity to do work or produce change. Energy appears in many forms. It is all around us at all times, but we call it by different names depending on its source. Shine the flashlight into the students' faces and explain that *light* is a radiant energy. Ask them to name the light's energy source. (*Anticipated Answer: a battery*) Ask them if they can name another radiant energy whose source is not a battery. (*Anticipated Answer: the sun.*) Tell them that nearly all energy comes ultimately from the sun. Energy sources can be classified in many different ways, and today we are going to be learning about many of these ways by playing an energy word game.
2. Share the objectives.
3. Pass out the "N"ERGY sheets, cards, and space markers to the students, and explain that the game is played like Bingo, except this game is called "N"ERGY because their cards contain words naming different sources of energy.
4. Explain the following: Either the teacher or a student can be a "caller," The caller draws a definition strip from a container and reads. Each time the caller reads a definition, he/she checks off the term on the term sheet. If students can match a term on their cards with the definition, then they place a space marker over that word. The first few games the students can use their "N"ERGY sheets, but another day they can play the game without the sheets. When a student has a complete line down, across, or diagonally, he/she calls out "N"ERGY! Then the student calls off the terms that were covered to make a straight line, and the caller looks at the term list to confirm if the student is correct.
5. With fifth or sixth graders, the game can be made more challenging if the student who calls out "N"ERGY is required to define each term in their own words.

Closure

Students choose one term from their card and define it for their group or the class. The students need to listen carefully to each other because the students can "beep" anyone who repeats a term already presented and defined. (A student beeps by calling out quietly "beep" if they hear someone repeat an answer that has already been given.)

Clean Up

The classroom needs to be left just as it was. Give each group specific clean up tasks, and compliment the groups/students.

Supplementary Activities

1. The students play the game without their "N"ERGY definition sheets.
2. The students look up the terms in dictionaries and encyclopedias to share with the class.
3. The students cut out pictures of different energy sources in magazines and glue them into a blank "N"ERGY card to make a picture game instead of a word game."

4. The students make an “energymobile.”

N *	E	R	G	Y
battery	nuclear	primary	propane	renewable
chemical	fusion	uranium	gravity	wind
crude oil	oil shale	FREE	steam	radiant
gasoline	hydroelectric	tidal	wood	potential energy
coal	fission	oil	electricity	geothermal

N	E *	R	G	Y
coal	fission	geothermal	methane	oil shale
methane	gravity	renewable	radiant	nuclear
tidal	wood	FREE	electricity	gasoline
kinetic	food	fossil fuels	garbage	fuel
heat	solar	kinetic	primary	chemical

N	E	R *	G	Y
kinetic	solar	wood	coal	fission
fossil fuels	water	potential	charcoal	heat
steam	wind	FREE	food	uranium
geothermal	methane	gravity	renewable	tidal
propane	oil	hydroelectric	fusion	crude oil

N	E	R	G *	Y
fossil fuels	chemical	battery	fuel	gasoline
nuclear	wind	primary	crude oil	kinetic
steam	oil shale	FREE	uranium	fusion
heat	propane	charcoal	water	food
electricity	solar	oil	hydroelectric	radiant

N	E	R	G	Y *
battery	coal	food	gasoline	hydroelectric
nuclear	natural gas	oil	gravity	solar
steam	potential	FREE	kinetic	wind
water	garbage	wood	chemical	charcoal
electricity	tides	fuel	fossil fuels	energy

TERM LIST

battery	<input type="checkbox"/>	methane	<input type="checkbox"/>
chemical	<input type="checkbox"/>	natural gas	<input type="checkbox"/>
coal	<input type="checkbox"/>	nuclear	<input type="checkbox"/>
crude oil	<input type="checkbox"/>	oil	<input type="checkbox"/>
electrical	<input type="checkbox"/>	oil shale	<input type="checkbox"/>
electricity	<input type="checkbox"/>	potential	<input type="checkbox"/>
energy	<input type="checkbox"/>	primary	<input type="checkbox"/>
fission	<input type="checkbox"/>	propane	<input type="checkbox"/>
food	<input type="checkbox"/>	radiant	<input type="checkbox"/>
fossil fuels	<input type="checkbox"/>	radiant	<input type="checkbox"/>
fuel	<input type="checkbox"/>	renewable	<input type="checkbox"/>
fusion	<input type="checkbox"/>	solar	<input type="checkbox"/>
		steam	<input type="checkbox"/>
garbage	<input type="checkbox"/>	thermal	<input type="checkbox"/>
gasoline	<input type="checkbox"/>	tidal power	<input type="checkbox"/>
geothermal	<input type="checkbox"/>	uranium	<input type="checkbox"/>
gravity	<input type="checkbox"/>	water	<input type="checkbox"/>
heat energy	<input type="checkbox"/>	wind	<input type="checkbox"/>
hydroelectric	<input type="checkbox"/>	wood	<input type="checkbox"/>
kinetic	<input type="checkbox"/>		

N *	E	R	G	Y
battery	nuclear	primary	propane	renewable
chemical	fusion	uranium	gravity	wind
crude oil	oil shale	FREE	steam	radiant
gasoline	hydroelectric	tidal	wood	potential energy
coal	fission	oil	electricity	geothermal

N	E *	R	G	Y
coal	fission	geothermal	methane	oil shale
charcoal	gravity	renewable	radiant	nuclear
tidal	wood	FREE	electricity	gasoline
water	food	fossil fuels	garbage	fuel
heat	solar	kinetic	primary	chemical

N	E	R *	G	Y
kinetic	solar	wood	coal	fission
fossil fuels	water	potential	charcoal	heat
steam	wind	FREE	food	uranium
geothermal	methane	gravity	renewable	tidal
propane	oil	hydroelectric	fusion	crude oil

N	E	R	G *	Y
fossil fuels	chemical	battery	fuel	gasoline
nuclear	wind	primary	crude oil	kinetic
steam	oil shale	FREE	uranium	fusion
heat	propane	charcoal	water	food
electricity	solar	oil	hydroelectric	radiant

N	E	R	G	Y *
battery	coal	food	gasoline	hydroelectric
nuclear	natural gas	oil	gravity	solar
steam	potential	FREE	kinetic	wind
water	garbage	wood	chemical	charcoal
electricity	tides	fuel	fossil fuels	energy

TERM & DEFINITIONS

Battery: A device for generating an electric current by chemical reaction.

Charcoal: A black, porous carbonaceous material produced by the heating of wood and used as a fuel.

Chemical energy: A form of energy existing in coal, natural gas, oil and all chemical compounds.

Coal: A hydrocarbon mineral formed from organic matter (plants) that is often used to generate electricity or heat.

Crude oil: Unrefined petroleum that is made up of thousands of different hydrocarbons.

Electric energy: The energy of electric charges that is measured in watts or kilowatt hours.

Electricity: A secondary energy source; an electric current used as a source of power.

Energy: The ability to do work or produce change.

Fission: The splitting of atoms to release energy.

Food: The stored chemical energy (photosynthesis) from plant and animal origin consisting of essential nutrients as a source of energy for people and animals.

Fossil fuels: Coal, oil, and natural gas that are formed from ancient plants and animals.

Fuel: Anything that burns to produce heat energy.

Fusion: The combining of atoms to release energy.

Gasoline: A mixture of flammable liquid hydrocarbons made from crude petroleum and used as a fuel for cars, etc.

Garbage: The useless or discarded materials (refuse) that can be used to produce natural gas or generate electricity.

Geothermal Energy: The heat energy from within the earth in the form of: 1) steam, 2) hot water, or 3) hot rocks or volcanic molten rock.

Gravity: The natural attraction between massive bodies; the force that pulls an object in midair to the earth.

Heat energy: The energy produced from the burning of a fuel like coal, oil, and natural gas, or the fusion of uranium.

Hydroelectric: Generating electricity by using the energy of falling water.

Kinetic: Energy of motion.

Methane: The simplest or basic hydrocarbon unit (molecule) that makes up 90% of natural gas.

Natural gas: A combustible gas found in the earth that is used to heat water, homes, and cook food.

Nuclear energy: The energy inside the nucleus of the atom which binds the nucleus together.

Oil: Any of many kinds of combustible liquids obtained from animals and plants that is used as a fuel.

Oil Shale: A sedimentary rock containing kerogen. The kerogen yields crude oil when heated.

Potential Energy: Energy stored in an object due to its position.

Primary Energy: Energy in its naturally occurring form: coal, oil, and natural gas.

Propane: A combustible gas found in natural gas that contain 3 carbon and 8 hydrogen atoms (C^3H^8)

Radiant Energy: Energy transmitted by waves such as light through space or other medium.

Renewable Energy: A nondepletable source of energy as the sun.

Solar energy: The primary source of all energy; this is radiation energy from the sun.

Steam: The vapor phase of water that can be used as a energy source.

Tidal Power: The power created by the falling and rising of the ocean tides.

Uranium: The fuel used in a nuclear reactor to generate electricity.

Water: The potential energy of this liquid when it is located at elevations above sea level can be used to produce electricity.

Wind: A form of moving (kinetic) energy produced in part by the sun's heating of the earth's atmosphere.

Wood: The fibrous xylem of trees and shrubs often burned for fuel.

DEFINITION STRIPS

Battery: A device for generating an electric current by chemical reaction.	Energy: The ability to do work or produce change.
Charcoal: A black, porous carbonaceous material produced by the heating of wood and used as a fuel.	Fission: The splitting of atoms to release energy.
Chemical: Mineral Energy: A form of energy existing in coal, natural gas, and oil.	Fossil Fuels: Coal, oil, and natural gas that are formed from ancient plants and animals.
Coal: A hydrocarbon mineral formed from organic matter (plants) that is often used to generate electricity or heat.	Fuel: Anything that burns to produce heat energy.
Crude oil: Unrefined petroleum that is made up of thousands of different hydrocarbons.	Fusion: The combining of atoms to release energy.
Electric Energy: The energy of electric charges that is measured in watts or kilowatt hours.	Gasoline: A mixture of flammable liquid hydrocarbons made from crude petroleum and used as a fuel for cars.
Electricity: A secondary energy source; an electric current used as a source of power.	Garbage: The useless or discarded materials (refuse) that can be used to produce natural gas or generate electricity.
Geothermal Energy: The heat energy from within the earth in the form of: 1) steam, 2) hot water, or 3) hot rocks or volcanic molten rock.	Gravity: The natural attraction between massive bodies; the force that pulls an object in midair to the earth.
Heat energy: The energy produced from the burning of a fuel like coal, oil, and natural gas, or the fusion of uranium.	Potential Energy: Energy due to its position.
Hydroelectric: Generating electricity by using the energy of falling water.	Primary Energy: Energy in its naturally occurring form: coal, oil, and natural gas.
Kinetic: Energy of motion.	Propane: A combustible gas found in natural gas that contain 3 carbon and 8 hydrogen atoms (C^3H^8)

Methane: The simplest or basic hydrocarbon unit (molecule) that makes up 90% of natural gas.	Radiant Energy: The light from either a light bulb or the sun.
Natural gas: A combustible gas found in the earth that is used to heat water, homes, and cook food.	Renewable Energy: A nondepletable source of energy as the sun.
Nuclear energy: The energy inside the nucleus of the atom which binds the nucleus together.	Solar energy: The primary source of all energy; this is radiation energy from the sun.
Oil: Any of many kinds of combustible liquids obtained from animals and plants that is used as a fuel.	Steam: The vapor phase of water that can be used as a energy source.
Oil Shale: A sedimentary rock containing kerogen. The kerogen yields crude oil when heated.	Tidal Power: The power created by the falling and rising of the ocean tides.
Uranium: The fuel used in a nuclear reactor to generate electricity.	Wind: A form of moving (kinetic) energy produced in part by the sun's heating of the earth's atmosphere.
Water: The potential energy of this liquid when it is located at elevations above sea level can be used to produce electricity.	Wood: The fibrous xylem of trees and shrubs often burned for fuel.

Extra blank strips in case one or more get lost.
EXTRA “N”ERGY CARD

N	E	R	G	Y
		FREE		

Extra credit idea: The teacher could make copies of this blank card for students, and they could find or draw pictures of different energy sources to make their own game cards.